ALTUSEN™
Enterprise KVM Solutions by ATEN

16 Port High Density USB - PS/2 KVMP Switch
KH3116
User Manual

FCC Information

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected;
- Consult the dealer or an experienced radio/television technician for help.

RoHS

This product is RoHS compliant.

User Notice

All information, documentation, and specifications contained in this manual are subject to change without prior notification by the manufacturer. The manufacturer makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties as to merchantability or fitness for any particular purpose. Any of the manufacturer's software described in this manual is sold or licensed `as is'. Should the programs prove defective following their purchase, the buyer (and not the manufacturer, its distributor, or its dealer), assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any defect in the software.

The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Safety Instructions

General

- Read all of these instructions. Save them for future reference.
- Follow all warnings and instructions marked on the device.
- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- Do not use the device near water.
- Do not place the device near, or over, radiators or heat registers.
- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- Never spill liquid of any kind on the device.
- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.
- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.
- If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Position system cables and power cables carefully; Be sure that nothing rests on any cables.
- When connecting or disconnecting power to hot pluggable power supplies, observe the following guidelines:
- Install the power supply before connecting the power cable to the power supply.
- Unplug the power cable before removing the power supply.
- If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies.
- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
  - The power cord or plug has become damaged or frayed.
  - Liquid has been spilled into the device.
  - The device has been exposed to rain or water.
  - The device has been dropped, or the cabinet has been damaged.
  - The device exhibits a distinct change in performance, indicating a need for service.
  - The device does not operate normally when the operating instructions are followed.
- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.

Rack Mounting

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a device from the rack.
- Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.
- After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to devices in the rack.
- Do not step on or stand on any device when servicing other devices in a rack.

Package Contents

The KH3116 package consists of:

1 KH3116 High Density USB - PS/2 KVMP Switch

2 Custom KVM Cable Sets

2 Custom Console Cable Sets

1 Firmware Upgrade Cable

1 Power Cord

1 Rack Mount Kit

1 Foot Pad Set (4 pcs.)

1 User Manual*

1 Quick Start Guide

1 Registration Card

Check to make sure that all of the components are present and in good order. If anything is missing, or was damaged in shipping, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the switch or to any other devices on the KH3116 installation.

***** Features may have been added to the KH3116 since this manual was printed. Please visit our website to download the most up to date version of the manual.

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About This Manual

This User Manual is provided to help you get the most from your KH3116 system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Overview

Chapter 1, Introduction, introduces you to the KH3116 system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2, Installation, describes how to set up your installation. The necessary steps – from a basic single stage hookup to a complete daisy chained operation are provided.

Chapter 3, Operation, explains the fundamental concepts involved in operating the KH3116.

Chapter 4, OSD Operation, provides a complete description of the KH3116's OSD (On Screen Display) and how to work with it.

Chapter 5, Hotkey Operation, details all of the concepts and procedures involved in the Hotkey operation of your KH3116 installation.

Chapter 6, Keyboard Emulation, provides tables that list the PC to Mac and PC to Sun keyboard emulation mappings.

Chapter 7, Firmware Upgrade, explains how to use this utility to upgrade the KH3116's firmware with the latest available versions.

An Appendix, provides specifications and other technical information regarding the KH3116.

Conventions

This manual uses the following conventions:

Monospaced	Indicates text that you should key in.
[ ]	Indicates keys you should press. For example, [Enter] means to press the **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
♦	Bullet lists provide information, but do not involve sequential steps.
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the *Start* menu, and then select *Run*.
	Indicates critical information.

ALTUSEN Information

Technical Support

North America Technical Phone Support	Registered ALTUSEN product owners are entitled to telephone technical support. Call the ALTUSEN Technical Support Center: 949-453-8885.
International Technical Phone Support	1. Contact your local dealer. 2. Call the ALTUSEN Technical Support Center:(886-2) 8692-6959.
Email Support	Email your questions and concerns to: support@altusen.com
Online Support ◆ Troubleshooting ◆ Documentation ◆ Software Updates	Online troubleshooting that describes the most commonly encountered problems and offers possible solutions to them; online documentation (including electronically available manuals); and the latest drivers and firmware for your product are available at the ALTUSEN website: **http://www.altusen.com**

Getting Help

For additional help, advice, and information, ALTUSEN provides several support options. If you need to contact ALTUSEN technical support with a problem, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help

Product Information

For information about all of ALTUSEN's products and how they can help you connect without limits, visit ALTUSEN on the web or contact an ALTUSEN Authorized Reseller.

- In the United States of America, call: 866-ALTUSEN (258-8736)
- In Canada and South America, call: 949-453-8885
- In all other locations, call: 886-2-8692-6789
- Visit ALTUSEN on the web at http://www.altusen.com for a list of locations and telephone numbers

Chapter 1
Introduction

Overview

The KH3116 High Density USB - PS/2 KVMP Switch is a control unit that allows access to multiple computers from a single console (keyboard, mouse, and monitor). Before the development of the KH3116, the only way to control multiple computer configurations from a single console was through a complex and costly network system. Now, with the KH3116, you can easily access multiple computers in a cost effective manner.

Although the switch uses a USB keyboard and mouse for the console, it supports both PS/2 and USB computers. ATEN offers high-quality cables to connect PS/2 or USB computers to the switch. See the *Cables* section, p. page 5 for more details.

A single KH3116 can control up to 16 computers. As many as 31 additional KH3116 units can be daisy chained to each other, so that up to 512 computers can all be controlled from a single keyboard-monitor-mouse console.

A custom ASIC (patent pending) provides an auto-sensing function that recognizes the position of each station on the chain, eliminating the need to manually set the position with DIP switches. A seven segment front panel LED displays each Station's position for easy identification.

For further convenience, the KH3116 features high density 15 pin connectors instead of the usual 25 pin connectors. This space-saving innovation allows a full, 16 port switch to be installed in a 1U system rack.

Setup is fast and easy; plugging cables into their appropriate ports is all that is entailed. Because the KH3116 intercepts keyboard input directly, there is no software to configure, so there is no need to get involved in complex installation routines or be concerned with incompatibility problems.

Access to any computer connected to the installation is easily accomplished either by entering *Hotkey* combinations from the keyboard, or by means of a powerful menu driven OSD (On Screen Display) system. A convenient *Auto Scan* feature also permits automatic scanning and monitoring of the activities of all computers running on the installation one by one.

There is no better way to save time and money than with a KH3116 High Density USB - PS/2 KVMP Switch installation. By allowing a single console to manage all the attached computers, a KH3116 installation: (1) eliminates the

expense of having to purchase a separate keyboard, monitor, and mouse for each computer; (2) saves all the space those extra components would take up; (3) saves on energy costs; and (4) eliminates the inconvenience and wasted effort involved in constantly moving from one computer to another.

Features

- Two USB consoles individually and simultaneously control up to 16 PS/2 and/or USB (PC, Mac, SUN) computers*
- Daisy chain up to 31 additional units to control up to 512 computers from a single console
- High density 16 port KVM switch is rack mountable and only 1U high
- Built-in USB device port supports USB Flash Disk sharing
- Neatly designed, high-quality, custom KVM cables for the high density server rack
- Color-coded connectors for easy installation
- Hot-pluggable feature allows adding or removing switches or computers without having to power down the switch
- OSD is mouse driven for quick and convenient navigation of the menu
- OSD screen automatically adjusts to resolution changes
- Auto scan feature for monitoring user-selected computers
- Two types of logout: manual and timed
- Auto-sensing of station positions for daisy chained installations - no need for manual DIP switch setting
- Front panel LED indicates station position
- Port names automatically reconfigured when station sequence is changed
- Password Security Protection (PSP): an administrator and up to four users each have separate login profiles
- No software required, convenient computer selection via front panel switches, intuitive On Screen Display (OSD) menu or Hot Key combination
- Auto scan offers easy monitoring of connected computers
- Keyboard & mouse emulation (Both PS/2 and USB) for smooth switching and simultaneously booting of multiple computers
- DDC emulation - video settings of each computer is automatically adjusted for optimal output to the monitor
- Superior Video Quality: Up to 2048 x 1536, DDC, DDC2, DDC2B
- Firmware upgradable - simultaneously upgrade the firmware for all daisy chained KH3116 switches
- Backward compatible with CS-1716, ACS-1216A series KVM switches

***** For PC compatible computers. Mac and Sun computers must use the USB cable connection (see p. 5).

Hardware Requirements

Console

- A VGA, SVGA, or Multisync monitor capable of the highest resolution that you will be using on any computer in the installation.
- A USB style mouse
- A USB style keyboard

Computer

The following equipment must be installed on each computer:

- A VGA, SVGA or Multisync card.
- Either a Type A USB port, or PS/2 keyboard and mouse ports (see the Cables discussion, below).

Cables

Only ATEN's Custom KVM cable sets, which are specifically designed to work with these switches, may be used. Depending on the cable type, the switches may be daisy chained, or linked to computers that use PS/2 or USB connectors to transfer keyboard and mouse data (see the installation diagrams on p. 11). To purchase Custom KVM cable sets, contact your dealer.

Cable Type	Length	Part Number
PS/2 KVM	1.2m	2L-5701P
PS/2 KVM	1.8m	2L-5702P
USB KVM	1.2m	2L-5702U
USB KVM	1.8m	2L-5701U
Master View Max to Master View Max (daisy chaining)	0.6m	2L-1700
Master View Max to Master View Max (daisy chaining)	1.8m	2L-1701

KH3116 Front View

1. Power LED

This LED illuminates when the unit is powered on.

2. Port LEDs

The Port LEDs provide status information about their corresponding CPU Ports. They come in pairs - one pair for each Port. The one on the top is the *On Line* LED; the one on the bottom is the *Selected Port* LED:

- The *On Line* LEDs light ORANGE to indicate that the computer attached to the corresponding port is up and running.
- The *Selected* LEDs light GREEN to indicate that the computer attached to the corresponding port is the one that has the KVM focus. The LED is steady under normal conditions, but flashes when its port is accessed under *Auto Scan Mode* (see *F7 SCAN*, p. 30).
- When the KH3116 is first powered on, the *On Line* and *Selected* LEDs blink one after the other as the Switch performs a self-test.

3. Station ID LED

The KH3116's Station ID is displayed here. If this is a Single Station installation (see p. 9), or the First Station on a Daisy Chained installation (see p. 12), the KH3116 has a Station ID of **01**.

On a Daisy Chained installation, the KH3116 auto-senses its position and displays the Station ID that corresponds to its place in the chain. (see *Port ID Numbering*, p. 16 for details).

(continues on next page)

4. Firmware Upgrade Section

- Firmware Upgrade Port

  The Firmware Upgrade Cable that transfers the firmware upgrade data from the administrator's computer to the KH3116 plugs into this RJ-11 connector. (See p. 41 for firmware upgrading details.)

- Firmware Upgrade Switch

  During normal operation and while performing a firmware upgrade, this switch should be in the NORMAL position. (See p. 45 for details about the use of this switch.)

5. Reset Switch

Pressing this switch in performs a system reset.

Note: This switch is recessed and must be depressed using a thin object, such as the end of a paper clip, or a ballpoint pen.

6. USB Peripheral Port

This USB 1.1 port supports USB Flash Disk mass storage devices. Only the computer that currently has the KVM focus can access the device connected to the USB port.

7. Port Down / Port Up Switches

- The button on the left is the Port Down switch. Press it to view the previous port.
- The button on the right is the Port Up switch. Press it to view the next port.

KH3116 Rear View

1. Power Jack

The power adapter cable plugs in here.

2. Daisy Chain Ports

When Daisy Chaining Units, the cables plug in here. The port on the left is the *Chain In* port; the one on the right is the *Chain Out* port.

3. CPU Port Section

The cables that link to the computers plug in here.

Note: The shape of these 15-pin connectors has been specifically modified so that only extender cables designed to work with this switch can plug in (see the *Cables* section on p. 5 for details). Do **NOT** attempt to use ordinary 15 pin VGA connector cables to link these ports to the computers.

4. Power Switch

This rocker switch turns the unit on and off.

5. Console Port Section

If this is a Single Station installation, or if this is the First Station unit of a daisy chained installation, the provided KVM cable sets plug in here. Connect the 15 pin SPHD connectors here, and connect the adapters on the other end of the cables to the keyboards, mice and monitors.

Chapter 2
Installation

Before you Begin

1. Important safety information regarding the placement of this device is provided on page iv. Please review it before proceeding.
2. Make sure that power to all the devices you will be connecting up have been turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

Single Station Installation

In a Single Stage installation, there are no additional KH3116's daisy chained down from the first unit. To set up a single stage installation, refer to the installation diagrams on the following pages, and do the following:

1. Using one of the provided KVM cable sets, plug the custom SPHD connector into one of the two Console Ports. Connect the monitor and USB keyboard and mouse to the appropriate connectors on the other end of the KVM cable.

   Repeat this procedure if you are installing a second console.

2. Using a KVM cable set (as described in the *Cables* section on p. 5), plug the custom SPHD connector into any available CPU Port on the switch.

Note: Ignore the Daisy Chain Ports at this time. They are only used when daisy chaining additional switches. Daisy chaining is described in the next section.

(continues on next page)

3. At the other end of the cable:

   a) For a USB connection (see p. 11), plug the USB and video cables into their respective ports on the computer.

   b) For a PS/2 connection (see p. 11), plug the keyboard, mouse and video cables into their respective ports on the computer.

   Repeat steps 2 and 3 for any additional computers you are installing.

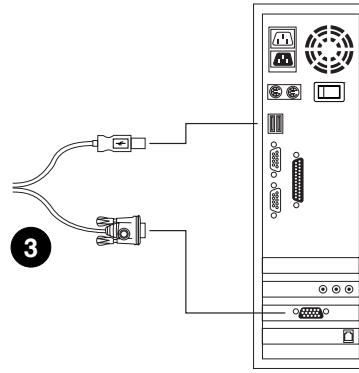
4. Plug the female end of the power cord into the switch's Power Jack, then plug the male end into an appropriate AC power source for your switch.

This completes the single stage installation. You now may turn on the power to the computers.

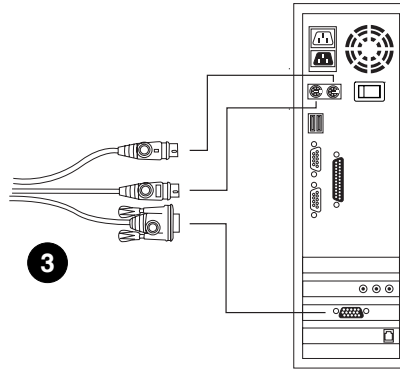
Note: The KH3116 initially links to the first computer you turn on.

Single Stage Installation

USB Cable Connection



PS/2 Cable Connection



Daisy Chaining

To control even more computers, up to 31 additional KH3116 High Density USB - PS/2 KVMP Switch units can be daisy chained down from the First Station. As many as 512 computers can be controlled from a single console in a complete installation. A table showing the relation between the number of computers and the number of KH3116 High Density USB - PS/2 KVMP Switch units needed to control them is provided in the Appendix.

To set up a daisy chained installation, do the following:

1. Make sure that power to all the devices you will be connecting up has been turned off.
2. Use a daisy chain cable set (described in the *Cables* section, p. 5), to connect the *Chain Out* port of the parent KH3116 unit to the *Chain In* port of the child KH3116 unit (First Station Out to Second Station In, Second Station Out to Third Station In, etc.).

   Note: You cannot use the *Chain In* port of the First Station switch, since it is the highest level parent.

3. Use custom cable sets (described in the *Cables* section, p. 5), to connect any available CPU port on the KH3116 installation to the Keyboard, Video and Mouse ports of the computers you are installing.
4. Power up the installation according to the following procedure:

   a) Plug in the power cord for the First Station.

      Wait for the unit to ascertain its Station ID and display it on the Station ID LED. (The Station ID for the First Stage unit is **01**, the ID for the Second Stage unit is **02**, the ID for the Third Stage unit is **03**, etc.)

   b) Plug in the power cords for each Station on the installation in turn (Second Station, then Third Station, etc.).

      In each case, wait for the Station ID to be ascertained and displayed on the current Station before plugging in the next one.

   c) After all the Stations are up, power on the computers.

Daisy Chain Installation

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Chapter 3
Operation

Hot Plugging

The KH3116 supports hot plugging - components can be removed and added back into the installation by unplugging their cables from the ports without the need to shut the unit down. In order for Hot Plugging to work properly, however, these procedures must be followed:

Switching Station Positions

You can switch station positions by simply unplugging from the old parent and plugging into a new one. After you do, in order for the OSD menus to correspond to the change, you must reset the OSD. See *RESET STATION IDS*, p. 27, for details.

Hot Plugging CPU Ports

After switching CPU ports, in order for the OSD menus to correspond to the change, you must manually reconfigure the OSD information for the new Port information. See *SCAN/SKIP MODE* under the *F3 SET* function (p. 24), and the Port Setting selections under the *F4 ADM* function (p. 27), for details.

Note: If the computer's Operating System doesn't support hot plugging, this function may not work properly.

Hot Plugging Console Ports

Keyboard, monitor, and mouse can all be hot plugged. When hot plugging the mouse:

- You may unplug the mouse and plug it back in again (to reset the mouse, for example), as long as you use the *same* mouse.
- If you plug in a different mouse, all the stations and all the computers on the installation must be shut down for 10 seconds, then restarted following the Power Up Sequence described under Step 4 on p. 12.

Note: If, after hot plugging (or at any other time), there is no response to keyboard and/or mouse input, perform a *Keyboard and Mouse Reset* by pressing in the Reset switch (see p. 7).

Powering Off and Restarting

If it becomes necessary to Power Off one of the KH3116 units, before starting it back up you must do the following:

1. Shut down all the computers that are attached to it.

> **Note:** You must unplug the power cords of any computers that have the *Keyboard Power On* function. Otherwise, the unit will still receive power from the computers.

2. Wait 10 seconds, then plug the switch back in.
3. After the KH3116 is up, power on the computers.

> **Note:** If you have shut down more than one Station, power up the highest Station first and work your way down to the lowest one. Wait for the Station ID to display on the front panel LED before powering up the next Station.

Port ID Numbering

Each CPU port on a KH3116 installation is assigned a unique Port ID. The Port ID is made up of two parts: a *Station Number*, and a *Port Number*:

- The *Station Number* - a two digit number which reflects the KH3116's position in the daisy chain sequence. This corresponds to the number displayed on the front panel Station ID LED.
- The *Port Number* - a two digit number which reflects the port on the KH3116 Station that the computer is connected to.
- The Station Number precedes the Port Number.
- Station and Port numbers from 1 - 9 are padded with a preceding zero, so they become 01 - 09.

For example, a computer attached to **Port 6** of **Station 12** would have a Port ID of: **12-06**.

Port Selection

Port Selection is accomplished either by entering Hotkey combinations from the keyboard, or by means of the KH3116's OSD (On Screen Display). *Hotkey Port Selection* is discussed in the chapter entitled *Hotkey Operation. OSD Operation* is discussed in the chapter by the same name, which begins on p. 19.

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Chapter 4
OSD Operation

OSD Overview

The On Screen Display (OSD) is used to handle all computer control and switching procedures. All procedures start from the OSD Main Menu. To invoke the OSD Main Menu, tap the **[Scroll Lock]** key twice.

Note: You can optionally change the Hotkey to the Ctrl key (see *OSD Hotkey*, p. 24), in which case you would tap **[Ctrl]** twice. With this method, the [Ctrl] keys must be on the same side (both left, or both right).

The OSD incorporates a two level (Administrator / User) password system. Before the OSD Main Screen comes up, a dialog box appears that asks you to provide your password. If the password function has been set, you must provide the password in order to access the OSD Main Screen.

If this is the first time that the OSD is being run, or if the password function has not been set, simply press **Enter**. The OSD Main Screen comes up in Administrator Mode. In this mode, you have administrator privileges, with access to all Administrator and User functions, and can set up operations (including password authorization for the future), as you would like. When you invoke the OSD, a screen similar to the one below appears:

(continues on next page)

Note: 1. The diagram depicts the Administrator's Main Screen. The User Main Screen does not show the **F4** and **F6** functions, since these are reserved for the Administrator and can't be accessed by ordinary Users.

2. OSD always starts in List view, with the highlight bar at the same position it was in the last time it was closed.

3. Only the ports that have been set accessible by the Administrator for the currently logged in User are visible (see *SET ACCESSIBLE PORTS* p. 27, for details).

OSD Navigation

- To dismiss the menu, and deactivate the OSD, Click the **X** at the upper right corner of the OSD Window; or press **Esc**.
- To Logout at any time, press **[F8]**, or Click **F8**, on the OSD Menu Bar, or Click the **ZZ** symbol at the upper right corner of the OSD screen.
- To move up or down through the list one line at a time, Click the Up and Down Triangle symbols (▲▼) or use the Up and Down Arrow Keys. If there are more entries than appear on the screen, the screen will scroll.
- To move up or down through the list one screen at a time, Click the Up and Down Arrow symbols (🡅🡇), or use the [Pg Up] and [Pg Dn] keys. If there are more entries than appear on the screen, the screen will scroll.
- To activate a port, Double Click it, or move the Highlight Bar to it then press **Enter**.
- After executing any action, you automatically go back to the menu one level above.

OSD Main Screen Headings

Heading	Explanation
SN-PN	This column lists the Port ID numbers (Station Number - Port Number) for all the CPU ports on the installation. The simplest method to access a particular computer is move the Highlight Bar to it, then press **Enter**.
QV	If a port is selected for Quick View scanning (see *Set Quick View Ports*, p. 27), an arrowhead displays in this column to indicate so.
	The computers that are powered on and are On Line have a Sun symbol in this column to indicate so.
NAME	If a port has been given a name (see Edit *Port Names*, p. 26), its name appears in this column.

OSD Functions

OSD functions are used to configure and control the OSD. For example, you can rapidly switch to any port, scan selected ports only, limit the list you wish to view, designate a port as a Quick View Port, create or edit a port name, or make OSD setting adjustments.

To access an OSD function:

1. Either Click a Function Key field on the screen, or press a Function Key on the keyboard.
2. In the Submenus that appear make your choice either by Double Clicking it, or moving the Highlight Bar to it, then pressing **Enter**.
3. Press **Esc** to return to the previous menu level.

F1 GOTO

Clicking the **F1** field or pressing **[F1]** activates the GOTO function. GOTO allows you to switch directly to a port either by keying in the port's *Name*, or its *Port ID*.

- To use the Name method, key in **1**; key in the port's Name; then press **Enter**.
- To use the Port ID method, key in **2**; key in the *Port ID*; then press **Enter**.

Note: You can key in a partial Name or Port ID. In that case, the screen will show all the computers that the User has *View* rights to (see *Set Accessible Ports*, p. 27), that match the Name or Port ID pattern, regardless of the current *List* settings (see *F2 LIST*, p. 23).

To return to the OSD Main Menu without making a choice, press **Esc**.

F2 LIST

This function lets you broaden or narrow the scope of which ports the OSD displays (lists) on the Main Screen. Many of the OSD functions only operate on the computers currently selected for Listing on the Main Screen with this function. The submenu choices and their meanings are given in the table below:

Choice	Meaning
ALL	Lists all of the ports on the installation.
POWERED ON	Lists only the ports that have their attached computers Powered On.
QUICK VIEW	Lists only the ports that have been selected as Quick View Ports (see *SET QUICK VIEW PORTS*, p. 27).
QUICK VIEW + POWERED ON	Lists only the ports that have been selected as Quick View Ports (see *SET QUICK VIEW PORTS*, p. 27), and that have their attached computers Powered On.

Move the Highlight Bar to the choice you want, then press **Enter**. An icon appears before the choice to indicate that it is the currently selected one.

F3 SET

This function allows each User and the Administrator to set up their own working environment. A separate profile for each is stored by the OSD and is activated according to the Username that is provided during Login.

To change a setting:

1. Double Click it; or move the highlight bar to it, then press **Enter**.
2. After you select an item, a submenu with further choices appears. To make a selection, either Double Click it; or move the Highlight Bar to it, then press **Enter**. An icon appears before the selected choice to indicate which one it is. The settings are explained in the table on the following page:

Setting	Function
OSD HOTKEY	Selects which Hotkey activates the OSD function: **[Scroll Lock] [Scroll Lock]** or **[Ctrl] [Ctrl]**. Since the Ctrl key combination may conflict with programs running on the computers, the default is the Scroll Lock combination.
PORT ID DISPLAY POSITION	Allows you to position where the Port ID appears on the screen. The default is the upper right corner, but you can choose to have it appear anywhere on the screen. Use the Mouse or the Arrow Keys plus Pg Up, Pg Dn, Home, End, and 5 (on the numeric keypad with Num Lock off), to position the Port ID display, then Double Click or press **Enter** to lock the position and return to the Set submenu.
PORT ID DISPLAY DURATION	Determines how long a Port ID displays on the monitor after a port change has taken place. The choices are: **User Defined** - which lets you select the amount of time (from 1 - 255 sec.); and **Always On** - which displays the Port ID at all times. If you select User Defined, key in the number of seconds, then press **Enter**. The default is 3 Seconds.
PORT ID DISPLAY MODE	Selects how the Port ID is displayed: the Port Number alone (**PORT NUMBER**); the Port Name alone (**PORT NAME**); or the Port Number plus the Port Name (**PORT NUMBER + PORT NAME**). The default is PORT NUMBER + PORT NAME).
SCAN DURATION	Determines how long the focus dwells on each port as it cycles through the selected ports in Auto Scan Mode (see *F7 SCAN*, p. 30). Key in a value from 1 - 255 seconds, then press **Enter**. Default is 5 seconds; a setting of 0 disables the Scan function.
SCAN/SKIP MODE	Selects which computers will be accessed under Skip Mode (see *F5 SKIP*, p. 29), and Auto Scan Mode (see *F7 SCAN*, p. 30). Choices are: **ALL** - All the Ports which have been set Accessible (see *SET ACCESSIBLE PORTS*, p. 27); **POWERED ON** - Only those Ports which have been set Accessible and are Powered On; **QUICK VIEW** - Only those Ports which have been set Accessible and have been selected as Quick View Ports (see *SET QUICK VIEW PORTS*, p. 27); **QUICK VIEW + POWERED ON** - Only those Ports which have been set Accessible and have been selected as Quick View Ports and are Powered On. The default is ALL.
SCREEN BLANKER	If there is no input from the console for the amount of time set with this function, the screen is blanked. Key in a value from 1 - 30 minutes, then press **Enter**. A setting of 0 disables this function. The default is 0 (disabled).
HOTKEY COMMAND MODE	Enables / Disables the Hotkey Command function in case a conflict with programs running on the computers occurs.

F4 ADM

F4 is an Administrator only function. It allows the Administrator to configure and control the overall operation of the OSD. To change a setting Double Click it; or use the Up and Down Arrow Keys to move the highlight bar to it then press **Enter**.

After you select an item, a submenu with further choices for you to select from appears. Double Click the choice you want, or move the Highlight Bar to then press **Enter**. An icon appears before the selected choice so that you know which one it is. The settings are explained in the following table:

Setting	Function
SET USERNAME AND PASSWORD	This function is used to set Usernames and Passwords for the Administrator and Users: 1. One Administrator and four User passwords can be set. 2. After you select one of the User fields or the Administrator field, a screen that allows you to key in your Username and Password appears. The Username and Password may be up to 12 characters long, and can consist of any combination of letters and numbers (A - Z, 0 - 9). You can use the Tab key, or the Up and Down Arrow keys to switch among the fields. 3. For each individual, key in the Username and Password; confirm the Password; then press **Enter**. 4. To modify or delete a previous Username and/or Password, use the backspace key to erase individual letters or numbers.
SET LOGOUT TIMEOUT	If there is no input from the console for the amount of time set with this function, the Operator is automatically logged out. A login is necessary before the console can be used again. This enables other Operators to gain access to the computers when the original Operator is no longer accessing them, but has forgotten to log out. To set the timeout value, key in a number from 1 - 180 minutes, then press **Enter**. If the number is 0 [zero], this function is disabled. Default is 0 (disabled).

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(F4 ADM continued)

Setting	Function
EDIT PORT NAMES	To help remember which computer is attached to a particular port, every port can be given a name. This function allows the Administrator to create, modify, or delete port names. To Edit a port name: 1. Click the port you want, or use the Navigation Keys to move the highlight bar to it, then press **Enter**. 2. Key in the new Port Name, or modify/delete the old one. The maximum number of characters allowed for the Port Name is 12. Legal characters include: ◆ All alpha characters: **A - Z*** ◆ All numeric characters: **0 - 9** ◆ **+ - / : .** and **Space** *Case does not matter; OSD displays the Port Name in all capitals no matter how they were keyed in. 3. When you have finished editing, press Enter to have the change take effect. To abort the change, press Esc.
RESTORE DEFAULT VALUES	This function is used to undo all changes and return the setup to the original factory default settings (see p. 48) - except for the Names and QV settings that were assigned to the Ports, which are saved.
CLEAR THE NAME LIST	This function is similar to Restore Default Values. The difference is that it also clears the Port Names and QV settings along with undoing all changes and returning the setup to the original factory default settings.
ACTIVATE BEEPER	Choices are **Y** (for Yes), or **N** (for No). When activated, the beeper sounds whenever a Port is changed; when activating the Auto Scan function (see p. 30); or an invalid entry is made on an OSD menu. The default is Y (activated).

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(F4 ADM continued)

Setting	Function
SET QUICK VIEW PORTS	This function lets the Administrator select which Ports to include as Quick View ports. ◆ To select/deselect a port as a Quick View Port, Double Click the port you want, or use the Navigation Keys to move the highlight bar to it, then press the **[Spacebar]**. ◆ When a port has been selected as a Quick View Port, an arrowhead displays in the QV column of the LIST on the Main Screen to indicate so. When a port is deselected, the arrowhead disappears. ◆ If one of the Quick View options is chosen for the LIST view (see *F2 LIST* p. 23), only a Port that has been selected here will display on the List. ◆ If one of the Quick View options is chosen for Auto Scanning (see *SCAN/SKIP MODE*, p. 24), only a Port that has been selected here will be Auto Scanned. The default is for no ports to be selected.
SET ACCESSIBLE PORTS	This function allows the Administrator to define User access to the computers on the installation on a Port-by-Port basis. For each User, select the target Port; then press the **[Spacebar]** to cycle through the choices: **F** (Full access), **V** (View Only) or blank. Repeat until all access rights have been set, then press **[Esc]**. The default is **F** for all users on all Ports. **Note:** A blank setting means that no access rights are granted. The Port will not show up on the User's LIST on the Main Screen.
RESET STATION IDS	If you change the position of one of the Stations in the daisy chain, the OSD settings will no longer correspond to the new situation. This function directs the OSD to rescan the Station positions of the entire installation and updates the OSD so that the OSD Station information corresponds to the new physical layout. **Note:** Only the Station Numbers get updated. Except for the Port Names, all Administrator settings (such as Set Accessible Ports, Set Quick View Ports, etc.), for all of the computers affected by the change, have to be manually redone.

(continues on next page)

(F4 ADM continued)

Setting	Function
SET OPERATING SYSTEM	Specifies the operating platform of the computer attached to each port. For each port, press the [**Spacebar**] to cycle through the choices (Win, Mac, Sun*, and Other). Repeat until all the ports have been set, then press [**Esc**]. The default is Win.
FIRMWARE UPGRADE	In order to upgrade the KH3116's firmware (see p. 41) you must first invoke *Firmware Upgrade Mode* with this setting.
KEYBOARD LANGUAGE	Sets the keyboard language layout for the computers attached to each port. You should select Auto (the default), which sets the keyboard language layout according to that of the computer. If selecting Auto does not properly configure the computer's keyboard language layout, choose the language of your keyboard layout from the list.
SET CONSOLE MODE	Selects which console(s) will be used to view and access the KVM ports. Choose from the following selections: 0: Dual-console (Console Ports 1 and 2 both access ports), 1: Console-1 (Console Port 1 only), 2: Console-2 (Console Port 2 only). This change will not be effected until you logout.

***** If you are installing a Sun or Mac computer, before you run it for the first time you must set the correct operating system for the port it is connected to with this function, otherwise, it will not boot.

F5 SKP

Clicking the **F5** field or pressing **[F5]** invokes Skip (SKP) Mode. This function enables you to easily skip backward or forward, switching the console focus from the currently active computer port to the previous or next available one.

- The selection of computers to be available for Skip Mode switching is made with the *Scan/Skip Mode* setting under the **F3 SET** function (see p. 24).
- When you are in Skip Mode, press the Left / Right Arrow Keys [←] / [→] to switch to the Previous / Next Port. Press the Up / Down Arrow Keys [↑] / [↓] to switch to the Previous / Next Station.

Note: When you Skip, you only Skip to the the previous or next available computer that is in the *Scan/Skip Mode* selection (see p. 24).

- If a Port has been selected for *Scan/Skip Mode*, a Left/Right Triangle symbol appears before its Port ID Display (when the focus switches to that port), to indicate so.
- While Skip Mode is in effect, the console will not function. You must exit Skip Mode in order to regain control of the console.
- To exit Skip Mode, press the [Spacebar] or **Esc**.

F6 BRC

F6 is an Administrator only function. Clicking the **F6** field, or pressing **[F6]**, invokes Broadcast (BRC) Mode. When this function is in effect, commands sent from the keyboard are broadcast to all available computers on the installation.

This function is particularly useful for operations that need to be performed on multiple computers, such as performing a system wide shutdown, installing or upgrading software, etc.

BRC works in conjunction with the **F2 LIST** function. The LIST function (see p. 23), is used to broaden or narrow the focus of which Ports appear on the OSD Main Screen. When you Broadcast a command, it is to the Ports currently displayed on the OSD Main Screen.

- While BRC Mode is in effect, a Speaker symbol appears before the Port ID Display of the port that currently has the console focus to indicate so.
- While BRC Mode is in effect, the mouse will not function. You must exit BRC Mode in order to regain control of the mouse.
- To exit BRC Mode, invoke the OSD (with the OSD Hotkey), then Click the **F6** field, or press **[F6]**, to turn BRC Mode off.

F7 SCAN

Clicking the **F7** field or pressing **[F7]** invokes Auto Scan Mode. This function allows you to automatically switch among the available computers at regular intervals so that you can monitor their activity without having to take the trouble of switching yourself.

- The selection of computers to be included for Auto Scanning is made with the *Scan/Skip Mode* setting under the **F3 SET** function (see p. 24).
- The amount of time that each Port displays for is set with the *Scan Duration* setting under the **F3 SET** function (see p. 24). When you want to stop at a particular location, press the **[Spacebar]** or **[Esc]** to stop scanning.
- If the scanning stops on an empty port, or one where the computer is attached but is powered Off, the monitor screen will be blank, and the mouse and keyboard will have no effect. After the *Scan Duration* time is up, the Scan function will move on to the next port.
- As each computer is accessed, an **S** appears in front of the monitor's Port ID display to indicate that it is being accessed under *Auto Scan Mode*.
- While Auto Scan Mode is in effect, the console will not function. You must exit Auto Scan Mode in order to regain control of the console.
- To exit Auto Scan Mode, press the **[Spacebar]** or **[Esc]**.
- While you are in Auto Scan Mode, you can pause the scanning in order to keep the focus on a particular computer either by pressing **P**, or with a Left Click of the mouse. See *Auto Scan Mode*, p. 33, for details.

F8 LOUT

Clicking the **F8** field, or pressing **[F8]** logs you out of OSD control of the computers, and blanks the Console screen. This is different from simply pressing **Esc** to deactivate the OSD. With this function you must log in all over again to regain access to the OSD, whereas with **[Esc]**, all you have to do to reenter the OSD is tap the OSD Hotkey.

Note: 1. When you reenter the OSD after logging out, the screen stays blank except for the OSD Main Menu. You must input your Username and Password before you can continue.

2. If you reenter the OSD after logging out, and immediately use **[Esc]** to deactivate the OSD without having selected a port from the OSD menu, a Null Port message displays on the screen. The OSD Hotkey will bring up the Main OSD Screen.

Chapter 5
Hotkey Operation

The KH3116 's hotkey function makes it convenient to control your KVM installation from the keyboard.

Note: The hotkey function must be enabled to use hotkey operations. See *Hotkey Command Mode*, p. 24 for details.

Invoking Hotkey Mode (HKM)

All hotkey operations begin by invoking HKM. To invoke HKM, do the following:

1. Press and hold down the **Num Lock** key
2. Press and release the **Minus** key
3. Release the **Num Lock** key

   `[Num Lock] + [-]`

Note: 1. The minus key must be released within one half second, otherwise Hotkey invocation is canceled.

2. There is an alternate invocation combination (see p. 35 for details.)

When HKM Is Active

- The Caps Lock and Scroll Lock LEDs flash in succession to indicate that HKM is in effect. They stop flashing when you exit HKM.
- A Command Line appears on the monitor screen. The command line prompt is the word *Hotkey:* in yellow text on a blue background. Hotkey information that you key in displays on the command line.
- Ordinary keyboard and mouse functions are suspended - only Hotkey compliant keystrokes and mouse clicks (described in the sections that follow) can be input.
- At the conclusion of some hotkey operations, you automatically exit hotkey mode. With others, you must exit manually by pressing the **Esc** key, or the **Spacebar**.

Hotkey Port Access

Hotkey Port Access allows you to select which computer has the KVM focus. The KH3116 provides the following Hotkey Port Access features:

- Selecting the Active Port
- Auto Scan Mode

Selecting the Active Port

You can bring the KVM focus to any computer with a hotkey combination that specifies its Port ID (see p. 16 for Port ID Numbering details):

1. Invoke HKM (see p. 31).
2. Key in the computer's Port ID number.

   The Port ID numbers display on the Command Line as you key them in. If you make a mistake, use [Backspace] to erase the wrong number.
3. Press [Enter].

   The KVM focus switches to the computer associated with the specified Port ID, and you automatically exit Hotkey Mode.

Auto Scan Mode

The KH3116's Auto Scan feature automatically switches among all the active CPU Ports that are accessible to the currently logged on User at regular intervals (see *Scan Mode* of the OSD **F3 SET** function, p. 24) so that the user can monitor their activity automatically.

To start Auto Scanning, key in the following Hotkey combination:

1. Invoke HKM (see p. 31)
2. Key in [A]

   After you press **A**, you automatically exit Hotkey Mode, and enter Auto Scan Mode.
3. To exit Auto Scan Mode, press [Esc] or [Spacebar]; or **right-click** with the mouse.

Note: While Auto Scan Mode is in effect, ordinary keyboard and mouse functions are suspended - only Auto Scan Mode compliant keystrokes and mouse clicks can be input. You must exit Auto Scan Mode in order to regain normal control of the console.

While you are in Auto Scan Mode, you can pause the scanning in order to keep the focus on a particular computer by pressing **P**, or with a **left-click** of the mouse.

During the time that Auto Scanning is paused, the Command Line displays: **Auto Scan: Paused.**

Pausing when you want to keep the focus on a particular computer is more convenient than Exiting Auto Scan Mode because when you Resume scanning, you start from where you left off. If, on the other hand, you Exited and restarted, Scanning would start over from the very first computer on the installation.

After pausing, to resume Auto Scanning, press any key. Scanning continues from where it left off.

Skip Mode

This feature allows you to switch between computers in order to monitor them manually. You can dwell on a particular port for as long or as little as you like - as opposed to Auto Scanning, which automatically switches after a fixed interval. To invoke Skip Mode, key in the following Hotkey combination:

1. Invoke HKM (see p. 31)
2. Key in [Arrow]

   Where [Arrow] refers to the Left, Right, Up or Down Arrow key. After you press **Arrow**, you automatically exit Hotkey Mode, and enter Skip Mode. The Arrow direction determines the type of Skip, as follows:

   ← Skips from the current port to the first accessible port previous to it. (See *SCAN/SKIP MODE*, p. 24, and *SET ACCESSIBLE PORTS*, p. 27 for detailed information.)

   → Skips from the current port to the next accessible port.

   ↑ Skips from the current port to the last accessible port of the previous Station.

   ↓ Skips from the current port to the first accessible port of the next Station.

3. To exit Skip Mode, press [Esc] or [Spacebar]

Note: While Skip Mode is in effect, ordinary keyboard and mouse functions are suspended - only Skip Mode compliant keystrokes can be input. You must exit Skip Mode in order to regain normal control of the console.

Hotkey Configuration

Alternate Hotkey Invocation Keys

An alternate set of Hotkey Invocation keys is provided in case the default set conflicts with programs running on the computers.

To switch to the alternate Hotkey Invocation set, do the following:

1. Invoke HKM (see p. 31)
2. Press and release the **H** key

The Hotkey Invocation keys become the Ctrl key (instead of Num Lock) and the F12 key (instead of Minus).

Note: This procedure is a toggle between the two methods. To revert back to the original [Num Lock] [Minus] method, invoke HKM, then press and release the **H** key again.

Alternate OSD Invocation Keys

The OSD activation method can be changed from tapping the Scroll Lock key twice to tapping the Ctrl key twice ([Ctrl] [Ctrl]). To change the OSD Invocation method, do the following:

1. Invoke HKM (see p. 31)
2. Press and release the **T** key

Note: This procedure is a toggle between the two methods. To revert back to the original [Scroll Lock] [Scroll Lock] method, invoke HKM, then press and release the **T** key again.

Platform Setup

The KH3116's default port settings are for a PC Compatible operating platform. You can modify the platform setting for each port by bringing the KVM focus to the port you want to change and using the hotkey combinations shown in the table below.

Key	Operation
[F1]	Sets the Windows keyboard operating platform for the port that currently has the KVM focus.
[F2]	Sets the Mac keyboard operating platform for the port that currently has the KVM focus.
[F3]	Sets the Sun keyboard operating platform for the port that currently has the KVM focus.
[R] [Enter]	Reset everything to the default settings.

The Hotkey entry method is as follows:

1. Invoke HKM (see p. 31)
2. Press and release the appropriate Function key (see table).

After completing a setting, you automatically exit HKM.

Note: The brackets indicate the keys you should press. Simply press the indicated keys - do not type the brackets.

Miscellaneous Actions

Hotkeys are also used to reset the USB, and toggle the beeper On and Off. To perform any of these operations, do the following:

1. Invoke HKM (see p. 31)
2. Press and release the appropriate action key (see table).

Key	Operation
[F5]	Performs a USB reset
B	Toggles the Beeper On or Off. The Command Line displays *Beeper On* or *Beeper Off* for one second; then the message disappears and you automatically exit HKM.

After completing a setting, you automatically exit HKM.

Hotkey Summary Table

[Num Lock] + [-] [Port ID] [Enter] or [Ctrl] + [F12] [Port ID] [Enter]		Switches access to the computer that corresponds to that Port ID.
[Num Lock] + [-] [A] or [Ctrl] + [F12] [A]		Invokes Auto Scan Mode.
	[P]	When in Auto Scan Mode, it pauses Auto Scanning.
	Left-click	
	Any key	Resumes Auto Scanning after pausing.
	[Esc]	Exits Auto Scan Mode.
	[Spacebar]	
	Right-click	
[Num Lock] + [-] [Arrow] or [Ctrl] + [F12] [Arrow]		Invokes Skip Mode and Switches computer access depending on which Arrow was pressed.
	[←]	Skips from the current port to the first accessible port previous to it.
	[→]	Skips from the current port to the next accessible port.
	[↑]	Skips from the current port to the last accessible port of the previous Station.
	[↓]	Skips from the current port to the first accessible port of the next Station.
	[Esc]	Exits Skip Mode.
	[Spacebar]	
[Num Lock] + [-] [H] or [Ctrl] + [F12] [H]		Changes the Hotkey Invocation keys from [Num Lock] + [-] to [Ctrl] + [F12] and vice versa.
[Num Lock] + [-] [T] or [Ctrl] + [F12] [T]		Changes the OSD Hotkey from [Scroll Lock] [Scroll Lock] to [Ctrl] [Ctrl] and vice versa.
[Num Lock] + [-] [F1] or [Ctrl] + [F12] [F1]		Sets the keyboard language layout of the port that has the KVM focus to Windows.
[Num Lock] + [-] [F2] or [Ctrl] + [F12] [F2]		Sets the keyboard language layout of the port that has the KVM focus to Mac.
[Num Lock] + [-] [F3] or [Ctrl] + [F12] [F3]		Sets the keyboard language layout of the port that has the KVM focus to Sun.
[Num Lock] + [-] [R] [Enter] or [Ctrl] + [F12] [R] [Enter]		Resets the switch to the default settings.
[Num Lock] + [-] [F5] or [Ctrl] + [F12] [F5]		Performs a USB reset.
[Num Lock] + [-] [B] or [Ctrl] + [F12] [B]		Toggles the Beeper On or Off.

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Chapter 6
Keyboard Emulation

The PC compatible keyboard can emulate the functions of the Mac and Sun keyboard. The emulation mappings are listed in the tables that follow.

Mac Keyboard Emulation

PC Keyboard	Mac Keyboard
[Shift]	Shift
[Ctrl]	Ctrl
[Ctrl] [1]	Mute
[Ctrl] [2]	V_DN
[Ctrl] [3]	V_UP
[Ctrl] [4]	
[Alt]	L Alt/Option
[Prt_Sc]	F13
[Scroll Lock]	F14
	=
[Enter]	Return
[Backspace]	Delete
[Ctrl] [ ]	F15

Note: When using key combinations, press and release the first key [Ctrl], then press and release the activation key.

Sun Keyboard Emulation

PC Keyboard	Sun Keyboard
[Ctrl] [T]	Stop
[Ctrl] [F2]	Again
[Ctrl] [F3]	Props
[Ctrl] [F4]	Undo
[Ctrl] [F5]	Front
[Ctrl] [F6]	Copy
[Ctrl] [F7]	Open
[Ctrl] [F8]	Paste
[Ctrl] [F9]	Find
[Ctrl] [F10]	Cut
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Ctrl] [H]	Help
	Compose
	◆

Note: 1. When using key combinations, press and release the first key [Ctrl**]**, then press and release the activation key.

2. If you need to go into OK Mode, which requires Stop + A, see *Troubleshooting*, p. 49.

Chapter 7
Firmware Upgrade

The Firmware Upgrade Utility

The Windows-based Firmware Upgrade Utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the KVM switch's firmware.

The Utility comes as part of a Firmware Upgrade Package that is specific for each device. New firmware upgrade packages are posted on our web site as new firmware revisions become available. Check the web site regularly to find the latest packages and information relating to them:

```
http://www.aten.com
```

Before You Begin

To prepare for the firmware upgrade, do the following:

1. From a computer that is not part of your KVM installation go to our Internet support site and choose the model name that relates to your device (KH3116) to get a list of available Firmware Upgrade Packages.
2. Choose the Firmware Upgrade Package you want to install (usually the most recent), and download it to your computer.
3. Use the *Firmware Upgrade Cable* provided with this unit, to connect a COM port on your computer to the *Firmware Upgrade Port* of your switch.
4. Shut down the computers on your KH3116 installation.
5. From your KVM switch console, bring up the OSD (see p. 19) and select the **F4ADM** function.
6. Scroll down to FIRMWARE UPGRADE (see p. 28). Press [Enter], then press [Y] to invoke Firmware Upgrade Mode For your reference, the current firmware upgrade version displays on the screen.

Starting the Upgrade

To upgrade your firmware:

1. Run the downloaded Firmware Upgrade Package file, either by double clicking the file icon, or by opening a command line and entering the full path to it. The Firmware Upgrade Utility *Welcome* screen appears:

2. Read and *Agree* to the License Agreement (enable the I Agree radio button).
3. Click Next to continue. The Firmware Upgrade Utility main screen appears:

   The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.
4. As you select a device in the list, its description appears in the *Device Description* panel.
5. After you have made your device selection(s), Click **Next** to perform the upgrade.

   If you enabled *Check Firmware Version*, the Utility compares the device's firmware level with that of the upgrade files. If it finds that the device's version is higher than the upgrade version, it brings up a dialog box

informing you of the situation and gives you the option to Continue or Cancel.

If you didn't enable *Check Firmware Version*, the Utility installs the upgrade files without checking whether they are a higher level, or not.

As the Upgrade proceeds status messages appear in the Status Messages panel, and the progress toward completion is shown on the *Progress* bar.

Upgrade Succeeded

After the upgrade has completed, a screen appears to inform you that the procedure was successful:

Click **Finish** to close the Firmware Upgrade Utility.

Upgrade Failed

If the upgrade failed to complete successfully a dialog box appears asking if you want to retry. Click **Yes** to retry. If you Click **No**, the *Upgrade Failed* screen appears:

Click **Cancel** to close the Firmware Upgrade Utility. See the next section, *Firmware Upgrade Recovery*, for how to proceed.

Firmware Upgrade Recovery

There are basically two conditions that call for firmware upgrade recovery:

- When you begin a firmware upgrade, but decide not to proceed with it.
- When the Mainboard firmware upgrade fails.

Note: If one of the cascaded switches fails to upgrade successfully, unplug it from the installation and perform the recovery and upgrade operation independently. After it has been successfully upgraded, plug it back into the installation.

To perform a firmware upgrade recovery, do the following:

1. Unplug the switch's power adapter cable.
2. Slide the *Firmware Upgrade Recovery Switch* (see p. 7) to the **Recover** position.
3. Use the Firmware Upgrade Cable (provided with this unit), to connect a COM port on your computer with the Firmware Upgrade Port of the switch.
4. Plug the switch's power adapter cable back in.
5. Follow the upgrade procedures that begin with the *Starting the Upgrade* section (p. 42).
6. After the upgrade completes successfully, unplug the switch's power adapter cable, once again.
7. Slide the *Firmware Upgrade Recovery Switch* back to the **Normal** position.
8. Plug the switch's power adapter cable back in.

This completes the Firmware Upgrade Recovery operation, and your switch is ready for use.

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Appendix

KH3116 - Computer Connection Table

The following tables indicate the relationship between the number of Master View Max Units and the number of computers that they control:

MVs	Computers	MVs	Computers	MVs	Computers	MVs	Computers
1	1 - 16	9	129 - 144	17	257 - 272	25	385 - 400
2	17 - 32	10	145 - 160	18	273 - 288	26	401 - 416
3	33 - 48	11	161 - 176	19	289 - 304	27	417 - 432
4	49 - 64	12	177 - 192	20	305 - 320	28	423 - 448
5	65 - 80	13	193 - 208	21	321 - 336	29	449 - 464
6	81 - 96	14	209 - 224	22	337 - 352	30	465 - 480
7	97- 112	15	225 - 240	23	353 - 368	31	481 - 496
8	113 - 128	16	241 - 256	24	369 - 384	32	497 - 512

Factory Default Settings

The factory default settings are as follows:

Setting	Default
OSD Hotkey	[Scroll Lock] [Scroll Lock]
Port ID Display Position	Upper Right Corner
Port ID Display Duration	3 Seconds
Port ID Display Mode	The Port Number plus the Port Name
Scan Duration	5 Seconds
Scan/Skip Mode	All
Screen Blanker	0 (Disabled)
Logout Timeout	0 (Disabled)
Beeper	Y (Activated)
Accessible Ports	F (Full Access) For all Users on all Ports
Hotkey Command Mode	[Num Lock] + [-]
Set Operating System	Win
Keyboard Language	Auto
Set Console Mode	0: Dual-Console

Troubleshooting

Symptom	Possible Cause	Action
Erratic behavior.	Unit not receiving enough power.	Check that the Power Adapter that was supplied with the unit is plugged in and functioning properly.
Mouse and/or Keyboard not responding.	Improper mouse and/ or keyboard reset.	Unplug the cable(s) from the console port(s), then plug it/them back in.
All Station IDs display as 01.	Station 1 has suddenly lost power.	Wait a few seconds for the system to reinitialize the station sequence and display the proper IDs.
When I emulate the Sun keyboard, I can't go into OK Mode ([Stop] [A]).	OK Mode has not been initialized yet.	To go into OK Mode, use the following key sequence: 1. Press and release [Ctrl] 2. Press and hold [T] 3. Press and hold [A] 4. Release [T] and [A] together

Specifications

Function		KH3116
Computer Connections	Direct	16
	Max	512 (via Daisy Chain)
Port Selection		OSD (On Screen Display); Hotkeys
LEDs	On Line Port	16 (Orange)
	Selected Port	16 (Green)
	Station ID	2 x 7 Segments
Console Connectors	Keyboard	1 x 6 pin mini DIN F
	Mouse	1 x 6 pin mini DIN F
	Video	1 x HDB-15 F
Computer Port Connectors		16 x SPHD-15 F
Daisy Chain Ports		1 x DB-25 M; 1 x DB-25 F
Scan Interval (OSD Select)		User Specified: 1 - 255 secs.
Emulation	Keyboard	PS/2
	Mouse	PS/2
Video		2048x1536; DDC2
Power Consumption		?
Environment	Operating Temperature	0 - 40° C
	Storage Temperature	-20 - 60° C
	Humidity	0 - 80% RH, Non-condensing
Physical Properties	Housing	Metal
	Weight	? Kg
	Dimensions (L x W x H)	28.4 x 43.8 x 4.4 cm (19" 1U)

Rack Mounting

The KH3116 can be mounted in a 1U system rack. For convenience and flexibility, the mounting brackets can screw into either the front or the back of the unit so that it can attach to the front or the back of the rack.

Front Rack Mounting

1. Screw the mounting brackets into the sides of the unit at the front , as shown in the diagram below.

2. Slide the unit into the rack and secure it to the front of the rack.

Rear Rack Mounting

1. Screw the mounting brackets into the sides of the unit at the rear , as shown in the diagram below.

2. Slide the unit into the rack and secure it to the rear of the rack.

Limited Warranty

ALTUSEN warrants this product against defects in material or workmanship for a period of one (1) year from the date of purchase. If this product proves to be defective, contact ALTUSEN's support department for repair or replacement of your unit. ALTUSEN will not issue a refund. Return requests can not be processed without the original proof of purchase.

When returning the product, you must ship the product in its original packaging or packaging that gives an equal degree of protection. Include your proof of purchase in the packaging and the RMA number clearly marked on the outside of the package.

This warranty becomes invalid if the factory-supplied serial number has been removed or altered on the product.

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence or modification of any part of the product. This warranty does not cover damage due to improper operation or maintenance, connection to improper equipment, or attempted repair by anyone other than ALTUSEN. This warranty does not cover products sold AS IS or WITH FAULTS.

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For details about extended warranties, please contact one of our dedicated value added resellers.

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